

THE EXCHANGERS' MONTHLY

VOL. I.

JERSEY CITY, N. J., NOVEMBER, 1885.

NO. 1.

FACTS CONCERNING OPALS.

The mineralogists and geologists have offered many clever theories to account for the splendor of the opal, but no one has completely satisfied everybody, and perhaps never will. It is conjectured that it is due either to the presence of water in its composition or to the disintegration of the laminae or layers of the stone, but even this is not certainly known. The Turks believe that the gem is of celestial origin, and thus escape all difficulties at once. The ancient opal mines have never been discovered, but there were no doubt deposits of the precious stones in Arabia, Syria and perhaps other parts of Asia, from which the ancients obtained their gems.

Central America and Mexico abound in opal bearing districts, which are much more abundant than might be supposed; but perhaps the finest opals of the present day are obtained in Hungary. The fire opal is found in the greatest perfection in the porphyry rocks near Zimapan, in Mexico; but while this variety is the most beautiful of all opals, it is also the most sensitive, and is frequently ruined beyond hope of repair by damp or exposure, or even by a sudden change in the weather. There is probably no gem, however, which is more subject to injury than the opal. Exposure to the light injures it very materially, though there is not one thing strange about this,

the fact being true also of amethyst, the garnet, and almost all other precious colored stones.

As stated, the finest opals are now found in Hungarian mines. When first extracted from their native matrix, the gems are soft, friable, tender and easily broken. The first thing to be done is to expose them to the air and light for a few days, until they have become hard, and then their colors begin to appear. At the same time the change takes place in the gem, it becomes also reduced in size from the evaporation of the quarry water contained in its veins. Great care must be exercised in drying the stone, or it will split and crack in a thousand directions, and become utterly worthless. It is also liable to another calamity, if exposed to a high temperature—that is, of losing iridescence, and, when this once happens, the stone is absolutely worthless.

HOW FISH ARE SPREAD.

In looking over the most recent faunal lists of this portion of the country, writes Dr. C. C. Abbott in his forthcoming "Rambles About Home," I find that much of our zoological literature is somewhat amusing. By a preconceived notion of what should be the geographical distribution of the fishes, and other animals as well, these "systematic" writers gravely assert that in such

a river a fish is found, but that it never wanders either to the eastward or westward. Perhaps originally this was true of our rivers, as the river itself determined the range of specific variation that has ultimately come about; but no river could retain all the species that originated in it. There are too many possible ways by which fish can be safely transported long distances for us to assert that none of them have operated in stocking a neighboring stream with species not native and to the manner born. There is undoubted evidence on record of whirlwinds gathering up immense numbers of minute fish and landing them miles away. These show-ers of fishes, frogs, and even salamanders, are not unknown, even if they are uncommon; and strange would it be if all such wind transported species should fall upon dry ground, and never into the water. Fertilized eggs, too, can likewise be blown a long distance even over low ranges of hills which sometimes separate river valleys, and so give rise to a race of fishes that previously were unknown in the locality. Eggs, too, might readily adhere to the mud that often clings to the feet of wading birds, and would thus be gently replaced in a distant river, miles away from that in which they were deposited by the parent fish. The present extensive system of canals also has tended to mingle the ichthyic faunas of our various river systems. And when all these possible, probable and actual conditions are considered it need excite no wonder if in any one of our rivers or its tributaries we now find occasional individuals of unsuspected species.

THE TICKING OF A CLOCK.

Slight though the ticking of a clock may be, its sudden cessation has a wonderful influence upon the inmates of a room in which the timekeeper is located. A dim realization of something wrong steals over the senses—a feeling as

if something of value had been lost, or a friend had gone away perhaps never to return, or as if some of the children were sick, until suddenly some one looks up and exclaims: "Why, the clock's stopped!" And immediately the ill-defined forebodings dissipate, the little shadow of gloom melts away, and as the winding-up process is completed, and the cheery ticking recommences, the family circle regains its wonted buoyancy of spirits and the members wonder what it was that made them feel so gloomy a few moments before.

A MOVING CITY.

The entire city of Virginia, in Nevada, has moved over thirty inches to the east since the big fire of 1876. The Maynard block, in Golden Hill, is known to be gradually sliding down in the direction of Gold canyon, and has moved nearly two feet since its erection. This movement is so gradual that it does not affect in any manner the safety of the building, as the ground, to the depth of nearly one hundred feet to the bed rock, is known to be continually sliding. It is a well-known fact among practical miners that the ground on which Virginia City is built is what is termed a slide, and that it is necessary to sink nearly one hundred feet before finding the natural bed rock. These slides are caused by the constant crumbling of the rocks on the mountain sides. The debris thus accumulated through incalculable ages is constantly gravitating downward, and in a few hundred thousands of years what is known as the site of Virginia City will be nothing but barren bed rock.

A missionary out West, bragging how well he had instructed some Indians in religion, called up one of them, and after some questions, asked him if he had not found great comfort last Sunday after receiving the sacrament. "Yes," replied the redskin, "but I wish it had been brandy."

DISAPPEARANCE OF REPTILES.

Reptiles are at present a small and dying race. They have seen their best days. But in the secondary age, as Tennyson graphically puts it, "a monstrous elf was of old the lord and master of the earth." At the beginning of that time the mammals had not been developed at all, and even at its close they were but a feeble folk, represented only by weak creatures like the smaller pouched animals of Austria and Tasmania. Accordingly, during the secondary period the reptile had things everywhere pretty much their own way, ruling over the earth as absolutely as man and the mammals do now. Like all dominant types, for the time being, they split up into many and various forms. In the sea they became huge paddling enaliosaurians; on the dry land they became great, erect dinosaurs; in the air they became terrible flying pterodactyls. For a vast epoch they inherited the earth, and then at last they began to fail, in competition with their own more developed descendants, the birds and mammals.

One by one they died out before the face of the younger fauna, until at last only a few crocodiles and alligators, a few giant snakes, and a few turtles remain among the wee skulking lizards and geckos to remind us of the enormous reptilian types that crowded to the surface of the fissile oceans. Long before the actual arrival of true birds upon the scene, however, sundry branches of the reptilian class had been gradually approximating to and foreshadowing the future flying things. Indeed, one may say, at an early period, the central reptilian stock, consisting of the long, lithe, four-legged forms like the lizards, still closely allied in shape to their primitive, newt-like and eel-like ancestors, began to divide latterly into sundry important branches. Some of them lost their limbs and became serpents; others acquired bony body coverings

and became turtles; but the vast majority went off in one or two directions, either as fish-like sea saurians, or as bird-like land saurians. It is with this last division alone that we shall have largely to deal in tracing out the pedigree of our existing birds.

Sunbeams.

A crank is usually a man whose head is turned

Of a man suddenly struck dumb, it may be said that his melancholy daze has come.

She was plump and beautiful, and he was wildly fond of her; she hated him, but womanlike, she strove to catch him. He was a fly.

The bones of the average man only weigh about twenty-four pounds and yet some people put on airs and step around as though they weighed a ton.

The Texas man who killed Davis, the New York counterfeit swindler, walks up and down his cell softly humming "I'm sawdust when I sing."

"I come of preferred stock," remarked a prominent Israelite on Wall street. "How is that?" asked a friend. "Are not the Jews a chosen people?" was the response.

"Was Rome founded by Romeo?" inquired a pupil of the teacher. "No, my son," replied the wise man. "It was Juliet who was found dead by Romeo."

A Scotch piper was asked if he could play "Within a Mile o' Edinboro Toon." "Within a mile!" he exclaimed; "why, mon, I could play within ten yards o't."

Teacher: "Yes, man comes highest in the scale. What comes next to man?" Small boy: "I know, sir." Teacher: "Well, what is it?" Small boy: "His shirt."

"Oh, aunt," cried little Amy in the nursery, the other day, "make Freddy behave himself; every time I happen to hit him on the head with a mallet he bursts out crying."

The fellow who swallowed a trade dollar the other day is probably the only man in the country who is heartily and sincerely glad that the Government didn't put in the other fifteen cents.

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Jersey City, N. J.

WITH this number, we inaugurate for Exchangers a new Monthly, to be devoted exclusively to their interests; hence, to be a success, we must have the support of those persons for whom it is intended. The price, 25 cts., is so low, that no person can refuse to subscribe on that account. There will no doubt be found errors in this number such as always accompany the first number of a new magazine, but these will be remedied in the next and succeeding numbers, as we shall endeavor to make each one superior to the one preceeding it. Therefore we ask all interested in this Monthly to send us sketches, short notes, and Exchange notices. To advertisers we would say, please glance at our prices. We would invite all publishers of Amateur papers to exchange with us, and all inserting an ad. of this Monthly, will receive the same space in our advertising columns. This paper is not to be devoted to any one branch of study, but all will be welcome to its space who send articles worthy of a place in it.

Items of Interest.

Well diggers in Dakota hunt for ant hills. The wise insects always locate over a vein of water.

There are in North America only three species of poisonous snakes—the rattlesnake, the copperhead or moccasin and the coral.

The cabmen of London drove their empty vehicles in the funeral procession of a popular comrade two abreast to the extent of a mile and a half.

On the island of Marago, at the mouth of the Amazon, there is a four-footed bird. In its growth one pair of legs change into wings by a process similar to that of the tadpole into the frog.

The betrothed bride of a Springfield man objects to marrying while in mourning for the death of a relative, and he has waited thirty-five years for an interval in her grief, so close together have been the bereavements.

An Alabama merchant, with many debtors among the planters, white and black, proclaims that he keeps an agent riding through the State to discover idlers, whom he will promptly discredit. "Only by industry can you and I thrive together," he explains.

The *Practical Photographer* suggests that in these days of convenient photographing appliances, those who visit in any official capacity scenes of murder, wreck or riot should apply the camera before anything is disturbed, as the evidence thus gained, being incontrovertible, might possess incalculable value.

A cheese dealer states that much of the so-called English cheese is made in this country and shipped to England, whence it is returned, enhanced in value by the sea voyage. Sometimes cheeses are shipped backward and forward, two or three times, each voyage adding to the richness of their flavor.

Wear your learning, like a watch, in a private pocket; do not pull it out, and strike it merely to show that you have it.

ADVERTISEMENTS.

When answering advertisements found in this paper, please do us a favor by mentioning "Saw advertisement in THE EXCHANGERS' MONTHLY."

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THE VEGETABLE GARDEN.

As a rule, one cannot choose his position or soil for his garden, but must make the best of that near where the dwelling happens to be. Still, it is quite certain that the distance of a quarter of a mile in many places, makes quite a difference as to many desirable points, such as earliness, ease of drainage, and fertility of the soil. On the large estates of Europe, these things are often taken into due consideration, and the "kitchen garden," the name given to the plot set aside for the growth of vegetables, is sometimes quite remote from the dwelling. The spot is frequently surrounded by high brick walls, on which are trained with the utmost care, fruits that would not otherwise be grown. These walls give shelter from winds. The enclosure have frequently from one to two acres of ground, and they are so protected that two or three weeks are gained to earliness and the success of many things that could not be grown is rendered possible. The old-fashioned spade is exclusively used in these gardens, the plow never touched them.

With us, however, the case is different, and wherever possible, the plow is employed, because so much cheaper than manual labor. The land devoted to the garden is therefore best in a long strip, more particularly where the heavy crops, as cabbage, potatoes, beets, etc., are grown. For the same reason no "made walks" are admissible. But where the space is small, as in city lots, or where a particular part is set aside for the growth of the lesser or summer crops proper, it may be easily enclosed by a fence, hedge, or high buildings. It will also easily suggest itself that the main walks may be bordered with flowering plants, backed by rows of raspberries, currants, gooseberries, or even dwarf fruit trees, thus combining pleasure and profit.

As we have said before, the vegetables

to be stored away for winter use may form part of the regular farm crops, and this enclosed space used only for present use or summer supply. An acre, half an acre, or less, thus devoted, can be made to grow a large quantity, and from part of the home adornment of the dwelling, with its walks leading from the pleasure ground proper. If the out-buildings, as they should be on a farm, are partially sheltered by trees, with the vegetable garden of which we speak, lying to the southeast of such an enclosure, the protection afforded from the harsh winds of early spring, will materially aid the growth of early vegetables. A capital material for such protection, in the absence of anything better, is a hedge of Norway spruce. This stands clipping well, and can be grown easily to the height of ten feet.

A BABY SHARP-SHOOTER.

One of the first toys that a little Esquimaux has is a small bow of whale-bone or light wood; and sitting on the end of the snow-bed he shoots his bow arrows, under the direction of his father or mother, or some one who care to play with him, at something on the other side of the snow house. This is usually a piece of boiled meat, of which he is very fond, stuck in a crack between the snow blocks; and if he hits it, he is entitled to eat it as a reward, although the little fellow seldom needs such encouragement to stimulate him in his play, so lonesome and long are the dreary winter days in which he lives buried beneath the snow.

These toy arrows are pointed with pin; but he is also furnished with blunt arrows, and whenever some inquisitive dog pokes his head in the igloo door, looking around for a stray piece of meat or blubber to steal, the little Esquimaux, if he shoots straight, will hit him upon the nose or head with one of the blunt arrows, and the dog will beat a hasty retreat. In this sense,

the little Esquimaux boy has plenty of targets to shoot at, for the igloo door is nearly always filled with the heads of two or three dogs, watching the baby's mother closely; and if she turns her head or back for a moment, they will make a rush to steal something, and to get out as soon as possible before she can pound them on the head.

In these exciting raids of a half-dozen hungry dogs, the little marksman is liable to get, by all odds, the worst of the encounter. He is too small to be noticed, and the first big dog that rushes by him knocks him over; the next probably rolls him off the bed to the floor; another upsets the lamp of oil on him; and while he is reeking with oil, another big dog, taking him for a sealskin full of blubber, tries to drag him out, when his mother happens to rescue him, after she has accidentally pommeled him two or three times with the club with which she is striking at the dogs; and were it not for his hideous crying and yelling, one would hardly know what he is, so covered is he with dirt, grease and snow. Thus the dogs occasionally have their revenge on the young sharp-shooter.

A RESERVATION FOR ASTRONOMERS.

The sun looks like a great glowing globe of blue light when seen from the top of Mt. Whitney, in the Sierra Nevada range, and because the air is so clear there the Government at Washington has set apart the mountain as a reservation for astronomers.

When Mme. Zelig, from the Theatre Lyrique, at Paris, was making a professional tour around the world, she gave a concert in the Society Islands. She agreed to sing an air from Norma and a few other songs, and was to receive in exchange a third part of the receipts. When counted, the prima donna's share was found to consist of three pigs, twenty-three turkeys, forty-four chickens and 5,000 cocoanuts.

EXCHANGES.

Any subscriber can insert an Exchange as many times as he wishes. Other than subscribers are limited to four times a year.

Commencing with No. 2, this column will be devoted to Exchange Notices. Persons wishing the same inserted will please send their copy in by the 15th inst. Subscribers will always be given the preference. If necessary, more space will be devoted to this department.

Going security for a relative is a good deal like licking a red-hot poker with the tongue. There is nothing to be gained, and only about one man in a million can do it without being scorched.

"Abandon the direct procession to the straight thitherward and devote by inclinatory and aberrant dextrogyration into a dextral incidence." They were Boston oxen and they promptly "gee'd."

As a drug clerk the female is not a brilliant success. When you wink at her across a soda fountain she doesn't know whether to put a little "Balm of Gilead" in your soda or hang her head and blush.

An eight-year-old Brooklyn boy, the other day, after a few moments spent in deep study, turned to his mother and asked: "Ma, don't you think we'd better send word that we don't want any more children?"

"Smith, did you see my wife go down this street?" "Yes, she passed about an hour ago." "Wonder what my chances are for overtaking her?" "Good. The sidewalk is just lined with show windows."

Enter Mr. Souave (with his son Tommy). Mr. Souave: "Ah! how-do, Mr. Jones? Tommy, this is Mr. Jones; you've heard me speak of him?" Tommy: "Oh, yes; that's the man you told mother was the biggest fraud in the city."

"Two hundred and forty bones in the human body," is the way it reads in the books; but a short acquaintance with a boarding-house mattress will make almost any man of spare build bet his last collar button there hasn't been a fair count.

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THE EXCHANGERS' MONTHLY

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VOL. I.

JERSEY CITY, N. J., DECEMBER, 1885.

NO. 2.

A Buried Forest.

At the clay-pits of Otto Ernst, near South Amboy, N. J., a curious development and exhibition of recent geological changes has been made. The clay-pits and mines of Mr. Ernst are opened at the bottom and on the lower part of the south slope of the high ground between the Raritan and Chesquake creek. In an interval between two points of higher ground which project out in the marsh and nearly to the creek, is a plot of 10 or 12 acres of nearly level ground, which is, in its highest parts, about 14 feet above the tide-mark. This plot, until the past season, was in forest of chestnut, oak, and other common timber, of which some of the largest trees were a foot and a-half in diameter. In the progress of his work Mr. Ernst has cut off the wood from this plot and opened down into it about 14 feet. For about 12 feet down he found only stratified sand with a little gravel in some of its layers, but at that depth he came upon a buried swamp of white cedar. The trees were small, only a few inches in diameter and still standing, with the bark and wood in complete preservation, as if they had only been buried a few years. The roots were still sound and were imbedded in swamp earth, such as white cedars grow in. But the level of this swamp was 2 feet lower than the adjoining marsh and the common spring tides.

A still more remarkable feature in this development was the discovery of a log of oak, perhaps 14 inches in diameter, 8 or 10 feet long, trimmed and lying in the sand and gravel, about 5 feet under the surface. This tree had been cut down with an axe, apparently, when the earth had filled up around the base of the tree to the depth of 5 or 6 feet; the stump being still standing on ground which was a little higher than the surface of the swamp. Other and larger stumps were also uncovered at the very bottom of the cedar swamp earth.

There is no known record or tradition when this forest was buried. It must have been since the settlement of the country, and cannot, at most, have been more than 280 years, and is probably much more recent than that. It is a remarkable instance of geological change since the country has been inhabited by white men. The little swamp occupies ground which had been covered with heavy forest timber before the cedars grew. The advance of the tides has first held back the fresh water so as to kill the forest trees and allow a swamp to form for the growth of cedars. Since that time violent rain-storms, with torrents of water, have cut gullies in the adjacent high grounds and carried the loosened earth forward and deposited it where it now lies. All this occurred so long ago that a forest has grown and been cut off from the new surface.

The whole appearance of the ground about the location is such that these recent changes would not be expected.

The place is well worth a visit. The opportunity to see such remarkable changes in our own times is rarely so well shown as it is here.

The underlying stoneware clay; the old forest in this soil on the clay; then the black cedar-swamp earth and its embedded small trees, and then the overlying plain of sand and gravel, with its later growth of upland timber, are all to be seen in this single locality, and with them there is the evidence that the ground which was formerly enough above the level of the sea to sustain a growth of upland timber, is now so low that every high tide could cover it with salt water.—*From the State Geologist's Report.*

PROF. JAMES WARREN is announced as the inventor of a new process of reducing ores by the aid of electricity. While examining a piece of gold-bearing quartz the Professor accidentally let it fall into one of the dynamos, which was in motion at the time. On looking for the piece of quartz the next day he found it in the dynamo, and to his surprise the gold in the quartz had been melted and had run to one side of the rock, forming a beautiful button. He immediately instituted a series of experiments, and succeeded in evolving a process by which gold, silver, and copper can be instantly smelted from concentrations by a powerful electric shock, almost equaling in intensity a stroke of lightning. The successful application of this process to other ores, as lead and antimony, is also expected.

THE manufacture of malleable nickel, as the result of M. Garnier's experiments, has been realized by the addition of 0.3 per cent. of phosphorous or manganese, and others have found that by adding one-tenth to one-third per cent. of magnesium it is practicable to weld the nickel thus obtained to iron and steel, roll it out in sheets and shape it into tubes, pipes, etc.

Receipts.

IMITATION GOLD.—Four ozs. of platinum, 3 ozs. of silver, 1 oz. of copper.

THE best paste for attaching stamps in an album is that made of rice flour.

TO MAKE RUBBER STAMP INK.—Dissolve aniline in hot glycerine, and strain while hot or warm.

LIQUID GLUE.—To 1 oz. of borax in 1 pint of boiling water, add 2 ozs. of shellac, and boil until the shellac is dissolved.

FINE MUCILAGE FOR LABELS.—Dextrine, 2 oz.; water, 6 oz.; alcohol, 1 oz.; glycerine, 1 dr.; mix and melt.

INK POWDER.—Powdered nut galls 4 ozs., copperas 3 ozs., logwood 1 oz., gum arabic $\frac{1}{2}$ oz. Sufficient for one quart of water.

"HANDY" WATER PENS.—Take best quality of violet aniline, reduce to a thick paste with water; then add mucilage and mix thoroughly. Apply the paste thus made to the pen and let it dry twelve hours. Any steel pen may be prepared in this way.

LIQUID MUCILAGE.—Fine clean glue, 1 lb.; gum arabic, 10 oz.; water, 1 quart; melt by heat in a glue kettle or water bath; when entirely melted, add slowly 10 oz. strong nitric acid, set off to cool. Then bottle, adding a couple of cloves to each bottle.

TO MAKE PADS.—A piece of fine woolen cloth, saturated with ink, makes an excellent pad, but it is customary to place sheet cotton underneath and muslin over the cloth, bringing the muslin down around the edges and fasten by tacking on a binding of tin or morocco leather strips.

RED SEALING WAX.—Purchase 4 lbs. shellac, 1½ lbs. Venier turpentine, 3 lbs. finest cinnabar, and add 4 ozs. Venetian; mix the whole well together, and melt over a very slow fire. Pour it on a thick, smooth glass, or any other flat, smooth surface, and make it into 3, 6, or 10 cent sticks.

Indian Relics.

THE Kingston Flats, just across the beautiful Susquehanna river, opposite the city of Wilkes Barre, proves to be a fruitful field for "Archæological Researches." The farm of John Severn, is evidently the site of an Indian Burial Ground. He has found many fine specimens on his place. Among others are a fine Indian pipe which did not have a flaw in it, and a large piece of Indian pottery which was in a good state of preservation, and the characteristic marking is still prominent and attractive. The latter was presented to the writer by Mr. S. in July.

A further little up on the Shoemaker farm was found a perfect Indian Pestle measuring $7\frac{1}{2}$ inches in circumference at the center and tapering slightly at the end, and 13 inches long; several Net Sinkers, Pottery and Arrow-heads, and a slightly imperfect stone Tomahawk, all of which were presented to the writer by Mr. Baird, a farmer working on the place. Still further up the farm of Col. Dorrance the writer found a number of perfect and imperfect Arrow-heads, and any amount of fragments of pottery, in size from $1\frac{1}{2}$ to 2 $\frac{1}{2}$ and 3 inches square.

In fact the whole region along the Susquehanna abound in relics of the noble savages who once inhabited our beautiful valley of Wyoming.

H. R. DETTRICK.

The First Mammoth.

A TOONGOOSTAN fisherman named Schumachoff, about the year 1799, was proceeding, as is the custom of fishermen of those parts when fishing proves a failure, along the shores of the Lena in quest of mammoth tusks, which have been there found in considerable abundance. During his rambles, having gone further than he had done before, he suddenly came face to face with a huge mammoth imbedded in clear ice. This extraordinary sight seems to have filled him with astonishment and awe, for instead of at once profiting by the fortunate discovery, he allowed several years to roll on before

he summoned courage to approach it closely, although it was his habit to make stealthy journeys occasionally to the object of his wonder. At length, seeing, it is presumed, the terrible monster made no signs of eating him up, and that its tasks would bring him a considerable sum of money, he allowed the hope of gain to overcome his superstitious scruples. He boldly broke the barrier of ice, chopped off the tusks and left the carcass to the mercy of the wolves and bears, who, finding it palatable, soon reduced the huge creature to a skeleton. Some years afterward a man of science was on the scent, and although so late at the death, found a huge skeleton with three legs, the eyes still in the orbits, and the brain uninjured in the skull.

A New Mineral.

Gerhardite.—Messrs. Wells & Penfield have described natural crystals of a basic copper nitrate, which was first identified by Prof. Brush, of New Haven, on specimens of copper ore from United Verde Mines, Jerome, Arizona Ty. The crystals, which belong to the orthorhombic system, are mainly made up of a large series of pyramids and the basic pinacoid. 12 forms were observed. Color, dark green. Hardness, 2. Spec. Grav., 3.426. The plane of the optic axis brachypinacoid, double refraction very strong, negative, pleochroism distinct. An analysis gave

H₂O 11.26, CuO 66.38, N O₅ 22.25.

Named after the chemist who first determined the composition of the same compound made artificially. This is the only insoluble nitrate known in nature.—*American Naturalist*.

PROF. G. A. KOENIG of the University of Penna., has described a Bugerite from the old Lout Mine, near Lake City, Colo., containing about 10 per cent. of silver. This is a new locality for the specie, making the third one in Colorado.

IN Europe considerable quantities of pine shavings are used for stuffing purposes.

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WE beg leave to return thanks for the generous support which our new magazine has received from all sides, and will endeavor to prove that it is not misplaced. The number of subscriptions already received are far beyond our expectations, and if the present rate maintains for a few months longer it will place this MONTHLY at the head of the list of amateur publications. To further this end we offer a number of premiums for subscriptions, to hold good until the new year, by which time we expect to have landed "THE EXCHANGERS' MONTHLY" at the head of the list. Again thanking all who have so far aided us, we submit the Second Number to our readers and hope they will find it an improvement on the First.

IN No. 3 we shall commence a series of articles by Mr. Thos. S. Ash, of Philadelphia, on the "General Characteristics and Physical Character of Minerals," which will be found very interesting and instructive.

ELPASOLITE is proposed by Messrs. Cross & Hillibrand, for a variety of crysolite, in which about 2% of the sodium is re-

placed by potassium. Al 11.32, Ca 0.72, Mg 0.22, K 28.93, Na 9.90, F 46.98. It was found in small cavities in the massive pachnolite, occurring with other minerals of the crysolite group at El Paso County, Colorado.

**HANKSITE.**—The name was suggested in May of the present year by Mr. W. E. Hidden, for an anhydrous sulphato-carbonate of sodium occurring in San Bernardino Co., Cal.

**THE RICHEST TIN DISTRICT IN THE WORLD.**—The tin districts of the Malay Peninsula are said to be, without exception, the richest in the world. The form of tin deposits there is known as the stream tin, and they are practically inexhaustible. The only way to work the deposits is to do as the Chinese did—strip the surface and extract the tin from the deposit by means of washing. Shafts, mines and galleries are never likely to pay. If British capitalists put Chinese to the work, under the supervision of a few Europeans, it is believed they would earn a rich return.

**AMERICAN ZINC.**—It is conceded that there is a good deal of zinc in the mountain systems of Virginia, Tennessee, Georgia, and Alabama. The deposits have not been worked outside of Virginia and Tennessee, but it is believed other mines will be opened whenever the times improve and there is a demand for an increased supply. At present the production of the country is just about equal to its consumption. No foreign zinc is coming in. Last year Illinois produced 17,594 tons; Kansas, 7,859; Missouri, 5,239 tons; and the Blue Ridge country 7,861 tons, a total in this country of 38,544 tons. This places the United States third on the list of zinc-producing countries. Germany produces 116,688 tons and Belgium 75,366 tons.

### Naturalists Puzzled.

James Pells, an old Kingston Point fisherman, captured with a net in the Hudson River, Saturday, Nov. 21, a monstrosity which measures a foot and a half in length. It has four feet, with four toes each, and a nail is plainly discernible on each toe. The legs are shaped like those of an alligator, while the head is like that of a copperhead snake, with two sharp rows of teeth and small eyes. There are four maroon-colored gills on each side of the head. The upper part of the body is of a dark mouse color covered with brown spots, the belly a pure white, and the tail long and narrow, tapering to a point. It was a rapid swimmer. Old fishermen are unable to give it a name. Hundreds of people examined it while on exhibition.

### The Bessemer Steel Process.

An improvement has been made on the Bessemer steel process at the Edgar Thompson Steel Works which, it is said, will have the effect of making Bessemer steel equal in quality to crucible steel, while it will cost only about one-tenth of the price. The change consists in a thorough mixing of Spiegel iron, or manganese, with molten iron in a ladle, so as to uniformly carbonize it. Bessemer steel can be produced at a cost of a cent to a cent and a half per pound, while that made in crucibles costs at least eleven cents per pound.

### The Rain Tree.

A tree known as the rain tree—*Pithecollobium Saman*—is found in the dryer parts of South America. The tree grows to the height of sixty feet, and its leaves have the peculiar property of condensing the moisture from the atmosphere. So copious is this condensation that a continual shower falls from the leaves and branches, until the surrounding soil is converted into a veritable marsh. Places that would otherwise be barren desert are by this means covered with the most luxuriant forests.

## EXCHANGES.

Any subscriber can insert an Exchange as many times as he wishes. Other than subscribers are limited to four times a year.

Acadialite, Aquamarine, Amblygonite, Ambrite, Apophyllite, Basanite, Beryl, Bismuthinite, Bournonite, Brookite, Cassiterite, Chabazite, Chlastolite, Cookite, Damourite, Descloizite, Greenockite, Grossularite, Heulandite, Hydrocuprite, Hydrozincite, Indicolite, Iodryite, Itacolumite, Laumontite, Lepidolite, Molybdenite, Oligoclase, Orpiment, Pyrolusite, Rubillite, Rutile, Sodalite, Tetrahedrite, Thulite, Topaz, Uranite, Vanadinite, Vermiculite, Wulfenite, Zaratite, Zircon, and Zeolites for fine minerals only. Correspondence solicited. THOMAS. S. ASH, 126 Chestnut Place, West Phila., Pa.

I will exchange Indian and Mound Builders' relics for same, or curiosities of any kind; also old U. S. and foreign copper coins, ocean curiosities, fossils, petrifications, and other curiosities; for anything suitable for a cabinet. GEO. W. PITMAN, Newcastle, Ind.

Will exchange a new game or story book for 25 foreign stamps catalogued at not less than 2 cents each, or 10 stamps catalogued at not less than 5 cents each, or 100 U. S. stamps, any kind but 1-cent blue, 2-cent brown, present issue, 3-cent green, and 2-cent brown, 3-cent green envelopes. An old unused U. S. Postal Card, brown or buff, for any foreign postal catalogued at not less than 4 cents. Have books, stamps, curios, maps, etc., to exchange. List for 2-cent stamp. I wish to exchange stamps with collectors. COLLECTOR, Lena, Ill.

Amateur and stamp papers, and curiosities for stamps not in my collection. N. H. BERTRAM, Smith's Grove, Ky.

Rose quartz, columnar gypsum, stilbite, natrolite, calcite, datolite, anthophyllite, vulpinite, galenite, silver, cinnabar, mica, green feldspar, for other minerals not in my collection. ARTHUR CHAMBERLAIN, 284 Pavonia Ave., Jersey City, N. J.

I will send ten kinds of choice and rare mineral specimens, arrow-heads, etc., to each collector who will send me twenty-five post marks and a 4-cent stamp for postage. HENRI BISHOP, 10 Church St., Lynn, Mass.

WANTED.—A Golden Rule or any other small Type Writer. Persons having one to exchange will please write to the NATURALISTS SUPPLY CO., Plymouth, Conn., stating their price and wants.

Colonial U. S. foreign coins, stamps, wild cat and Confederate Currency, and autographs, for autographs of prominent persons, and historical documents. WILLIAM FISHER CORNELL, Kalamazoo, Michigan.

Minerals, fossils, shells, Indian relics, keyhole urchins, sand dollars, and all kinds of sea curiosities, for stamps of any kind. OSCAR H. SPRAY, La Hoyt, Iowa.

Rare Iowa minerals for minerals, fossils, shells, Indian arrow heads, sharks teeth, sea beans, or any sea curiosities. JAMES C. JAY, La Hoyt, Henry Co., Iowa.

### Autographs.

The art of collecting Autographs is not the work of a mere pastime but is a literary pursuit, through its connection with historical events. A fine collection of autographs shows that the owner or collector of them has accomplished a great deal of hard labor in his search for his prizes. Probably the rarest known autograph is that of Moliere, the French dramatist, and the easiest to obtain, or the most common that are generally seen in collections, are those of Carl Schurz and Th. Nast. In looking over the collection of Mr. Wm. Fisher Cornell, we notice particularly the following, among others:

That of George Washington, in a fine neat handwriting, which was taken from his ledger of 1771. A cheque for \$1911.22, dated Boston, May 13, 1883, is written and signed by Daniel Webster. Two documents are signed by the Ex-Secretary's of the U. S. Senate, Walter Lawrie and Asbury Dickins. A pass to the House of Commons is signed by Lord Cavendish, who was murdered at Phoenix Park. Very interesting letters are signed by Lewis Cass, Ralph Waldo Emerson, John B. Gough, Anna Dickenson, Schuyler Colfax, Horace Binney, Wm. C. Brent, P. T. Barnum, Oliver Wendell Holmes, Levy, James R. Osgood, M. Halstead, J. T. Trowbridge, E. P. Roe, and Com. D. D. Porter. General English documents are signed by Wm. Pitt, G. Lyttleton, George Grenville, J. Campbell, Newcastle, C. Townshend, Lord Northe, R. Walpole, Henry Pelham, and Lord Palmerston. Of renowned Military and Naval Officers are found the autographs of U. S. Grant, P. H. Sheridan, Wm. T. Sherman, Fitz John Porter, John A. Logan, W. T. Rosecrans, G. T. Beauregard, Robert Toombs, Thos. T. Craven, J. A. Dahlgren, McClellan, Jesse D. Eliot and D. D. Porter. Of the Presidents only a few had been gathered; those of Washington, Buchanan, Grant, Hayes, Garfield, Arthur, and Cleveland. Cleveland's autograph is surrounded by those of his entire Cabinet. Of Literary talent, the autographs are seen of H. B.

Stowe, Mary A. Livermore, John G. Whittier, Holmes, Emerson, Trowbridge, Will. Carleton, Joseph Medill, Whitelaw Reid, Charles A. Dana, Geo. W. Childs, Henry Watterson, David Ewing, Clara Doty Bates, and Elihu Burritt. Among Statesmen and Congressmen are found the autographs of James G. Blaine, Eugene Hale, T. W. Ferry, Don. M. Dickinson, Robt. T. Lincoln, Ingalls, Hoar, Sherman, Vest, Blackburn, Frank T. Frelinghuysen, Jeff. Davis, Wm. M. Evarts, Conkling, Wade Hampton, M. R. Waite, Jos. R. Hawley, Geo. Wm. Curtis, O. D. Conger, John P. St. John, and Chas. E. Stewart, with many others.

The wretch, Guiteau, the skeptic, Ingersoll, and the capitalists, Vanderbilt and Field's autographs are displayed. The above is only an outline of the collection, as it contains many old and valuable documents; the collection has been of short duration, and is having new and valuable autographs added almost daily.

As Mr. Cornell is desirous of gathering a large and valuable collection, those having rare autographs or documents, would confer a favor by writing him, at his address, Kalamazoo, Mich., stating what they have. By so doing it will greatly benefit Mr. Cornell, as well as those who write him.

### Gallium.

THE new metal gallium melts at 81.1° Fahrenheit, so that it liquefies when held in the hand. It is hard and resistant. It can be cut, and it possesses a slight malleability. When fused it adheres readily to glass, on which it forms a beautiful mirror, whiter than that produced by mercury. It oxidizes but very superficially when heated to redness in the air, and does not become volatile. Unlike lead it acquires only a slight tarnish on exposure to moist air, and is a highly crystalline metal. Its specific gravity is a little under 6. In its chemical characteristics the rare element gallium shows the greatest analogy to the abundant element aluminum.

## SPECIAL OFFER.

In order to immediately place this monthly in the hands of every exchanger, we will make the following offer for new subscribers:

On receipt of 25 cts. we will send either of the following articles: A specimen of either Anthophyllite, Rose Gypsum, or Calcite, or one hundred labels like those given in this column, together with subscription for one year.

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Remember that these offers only last good until the First of January, as after once subscribing for this Monthly you will need no inducement to renew your subscription.

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